

AK

Notice of Allowability

Application No.

10/002,054

Examiner

Hsien-Ming Lee

Applicant(s)

MIN, BYOUNG W.

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/26/04.
2. ☒ The allowed claim(s) is/are 4,6-10 and 13-17.
3. ☒ The drawings filed on 15 November 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

HSIEN-MING LEE
PRIMARY EXAMINER

Hsien-Ming Lee
 Primary Examiner
 Art Unit: 2823

DETAILED ACTION

Remarks

1. Applicant's cancellation to claims 1-3, 5, 11 and 12 is acknowledged. Claims 18-21 are withdrawn by the applicant.
2. The objection to specification and to claim 4 and the rejection, as set forth in the previous Office Actions, are withdrawn.

Examiner's Amendment

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
4. The application has been amended as follows:
Cancel non-elected claims 18-21.

Allowable Subject Matter

5. Claims 4, 6-10 and 13-17 are allowed.
6. The following is an examiner's statement of reasons for allowance:
The closest prior art of record, Mastsumoto to US 6,372,562, teaches a method, comprising:
 - providing a semiconductor stack, including an active layer 3 formed on a first insulator layer 2, wherein the first insulator layer 2 is formed on the semiconductor substrate 1 (Fig.3);
 - forming an opening in the first insulator layer 2 (Fig.4A);

- implanting the semiconductor substrate 1 through the opening and the first insulator layer 2 with a first species to form a first doped region 11 within the semiconductor substrate 1, wherein the first doped region 11 is the first conductivity type and is heavily doped (Fig.4B);
- after the implanting, forming a gate dielectric 6 on the active layer 3 (Fig.3C);
- forming a gate electrode 7 on the gate dielectric 6 (Fig.3C);
- forming a source region 8 in the active layer 3 adjacent a first side of the gate electrode 7 (Fig.3C);
- forming a drain region 8 in the active layer 3 adjacent a second side of the gate electrode 7, wherein the second side is opposite to the first side (Fig.3C);
- forming a first contact electrically connected to the first doped region.

In contrast, Mastsumoto neither teaches nor suggests forming a *masking layer* over the active layer, wherein the *active layer and the masking layer are patterned to have an opening*, implanting the semiconductor substrate *through the opening* (claim 4); removing a portion of the active layer and forming a doped region within the semiconductor substrate *before* forming the gate electrode (claim 10); removing a portion of the active layer to form an opening in the active layer and forming a *doped region* within the semiconductor substrate under the opening by implanting through the opening in the active layer *before* forming the *second insulator layer* (claim17).

Therefore, the instant invention is neither anticipated nor rendered obvious over the prior art of record.

Art Unit: 2823

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-Ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (8:00 ~ 6:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hsien-Ming Lee
Primary Examiner
Art Unit 2823

July 29, 2004

HSIEN-MING LEE
PRIMARY EXAMINER
7/29/04